

What is claimed is:

1. A radio communication system comprising a plurality of adjacent radio networks having overlapping service areas, a radio communication device having a connection list for registering a connecting  
5 communication device to which connection is to be performed, and a non-connection list for registering a non-connecting communication device to which connection is not to be performed; wherein

said radio communication device grasps the existence of a surrounding radio communication device through a predetermined  
10 method; and

when a new radio communication device is detected, an authentication verification is performed between said new radio communication device and, if said authentication is successful, said new radio communication device is registered in said connection list; and if  
15 said authentication fails, said new radio communication device is registered in said non-connection list.

2. A radio communication device for operation in a radio communication environment in which a plurality of adjacent radio  
20 networks have overlapping service areas, said radio communication device comprising:

communication means for communicating radio data;

control means for controlling the radio data communication of said communication means;

25 notification means for notifying one's own existence within a service area of said communication means;

terminal detection means for detecting existence of another radio communication device within said service area of said communication means; and

30 connection management means for managing connection/non-connection of said other radio communication device

detected within said service area.

3. The radio communication device according to Claim 2, wherein,  
under said radio communication environment, there is provided an  
5 adjacent ad-hoc radio network to which each radio communication  
device performs direct asynchronous ad-hoc communication without  
providing a device as a control station.

4. The radio communication device according to Claim 2, wherein:  
10 said notification means notifies existence of the radio  
communication device by transmitting a beacon signal under a  
predetermined frame period via said transmission means; and  
said terminal detection means grasps existence of another radio  
communication device by receiving said beacon signal from said  
15 transmission means.

5. The radio communication device according to Claim 2, wherein  
said connection management means performs authentication verification  
of a radio communication device detected by said terminal detecting  
20 means and registers said radio communication device in said connection  
list if authentication is successful, and registers said radio  
communication device in said non-connection list if authentication fails.

6. The radio communication device according to Claim 2, wherein  
25 said connection management means performs authentication verification  
of an apparatus among radio communication devices detected by said  
terminal detecting means which has no registration in both said  
connection list and said non-connection list, but does not perform  
authentication verification of an apparatus already registered in said  
30 non-connection list.

7. The radio communication device according to Claim 2, wherein said connection management means transmits an authentication request command against a radio communication device for registration in said connection list, and registers said radio communication device in said connection list and transmits an authentication completion command when receiving and authorizing authentication of an authentication request command from another radio communication device.
8. The radio communication device according to Claim 5, wherein said connection management means determines existence of authorization for authentication after performing authentication of a user, when receiving an authentication request command from another radio communication device.
9. The radio communication device according to Claim 5, wherein said connection management means erases from said connection list a radio communication device whose existence is not detected by said terminal detecting means during a period of time exceeding a time limit.
10. The radio communication device according to Claim 5, wherein said connection management means erases from said non-connection list a radio communication device whose existence is not detected by said terminal detecting means during a period of time exceeding a time limit.
11. The radio communication device according to Claim 4, wherein said control means sets a reception domain of predetermined duration within said frame period after said beacon signal and the remaining of said frame period is set as an unused domain.
12. A radio communication method for radio communication in a radio communication environment in which a plurality of adjacent radio

networks have overlapping service areas, said radio communication method comprising:

notification step of notifying existence of a radio communication device's own existence within its service area;

5 terminal detection step of detecting existence of another radio communication device within said service area; and

connection management step of managing connection/non-connection of said other radio communication device detected within said service area.

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13. The radio communication method according to Claim 12, wherein:  
said notification step notifies existence of the radio communication device by transmitting a beacon signal under a predetermined frame period; and

15 said terminal detection step grasps existence of another radio communication device by receiving said beacon signal.

14. The radio communication method according to Claim 12, wherein said connection management step performs authentication verification of  
20 a radio communication device detected in said terminal detecting step and registers said radio communication device in a connection list if authentication is successful, and registers said radio communication device in a non-connection list if authentication fails.

25 15. The radio communication method according to Claim 14, wherein said connection management step performs authentication verification of an apparatus among radio communication devices detected in said terminal detecting step which has no registration in both said connection list and said non-connection list, but does not perform authentication  
30 verification of an apparatus already registered in said non-connection list.

16. The radio communication method according to Claim 14, wherein said connection management step further comprises the steps of:

transmitting an authentication request command against a radio  
5 communication device for registration in said connection list; and

registers said radio communication device in said connection list and transmits an authentication completion command when receiving and authorizing authentication of an authentication request command from another radio communication device.

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17. The radio communication method according to Claim 14, wherein said connection management step determines existence of authorization for authentication after performing authentication of a user, when receiving an authentication request command from another radio  
15 communication device.

18. The radio communication method according to Claim 14, wherein said connection management step erases from said connection list a radio communication device whose existence is not detected in said terminal  
20 detecting step during a period of time exceeding a time limit.

19. The radio communication method according to Claim 14, wherein said connection management step erases from said non-connection list a radio communication device whose existence is not detected in said  
25 terminal detecting step during a period of time exceeding a time limit.

20. A computer-readable program for executing by computer system a radio communication process of radio communication in a radio communication environment in which a plurality of adjacent radio  
30 networks have overlapping service areas, said program comprising:

notification step of notifying existence of a radio communication

device's own existence within its service area;

terminal detection step of detecting existence of another radio communication device within said service area; and

connection management step of managing  
5 connection/non-connection of said other radio communication device  
detected within said service area.